

Preliminary data on the myriapod fauna (Chilopoda and Diplopoda) of some nature reserves in Poland

Artsiom Ostrovsky¹, Oleg Aleksandrowicz²

¹ Gomel State Medical University, Lange str. 5, Gomel, 246000 Republic of Belarus.
Email: Arti301989@mail.ru

² Institute of Biology and Earth Sciences, Pomeranian University in Słupsk, Poland.
Email: oleg.aleksandrowicz@apsl.edu.pl

Key words: myriapod fauna, nature reserves, Poland, centipedes, millipedes, species.

Abstract

This is a small study of the myriapod fauna of eight nature reserves in the Mazowian Lowland and Pomeranian Lake District of Poland. Faunistic data concerning 3 species of centipede and 5 of millipede in the Mazowian Lowland and 2 centipedes and 3 millipedes in the Pomeranian Lake District are presented.

Introduction

The Myriapod fauna of Poland includes 147 species from four classes; Chilopoda, Symphyla, Pauropoda and Diplopoda (Wytwer, 2008). The myriapod fauna of nature reserves and National Parks have been unevenly explored in Poland (Kaczmarek, 1964, 1977, 1989; Jaśkiewicz, 1974; Jędrzykowski, 1985; Trojan & Wytwer, 1995; Leśniewska, 1997; Leśniewska & Taborska, 2003; Leśniewska *et al.*, 2011; Jastrzębski *et al.*, 2006; Jastrzębski & Stańska, 2007). In this short note new distributional data are reported for 11 species.

Material and Methods

The study was carried out between 07–25.06.2019 in eight Polish nature reserves (Table 1). Five of these are located in the Masovian Lowland (Bukowiec Jabłonowski, Mosty Kalińskie, Łosiowe Błota, Jezioro Kiełpińskie, Klimonty) and three in the Pomeranian Lake District (Żurawie Chrusty, Ustronie, Dolina Huczka).

1. Bukowiec Jabłonowski is a forest nature reserve (established 1990, area 37.74 ha). It is located in the Mazowieckie Voivodeship and adjoins the SE border of the city of Legionowo, near Warsaw. Objective of protection – forest stand of different age and species with stands of European beech and black birch. The age of individual oaks and beeches is up to 160 years.
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.580>)
2. Mosty Kalińskie is a landscape phytocenotic natural reserve (established 2015, area 201.44 ha) and located in the Okuniewsko-Rembertowskie Forests. Along the Długa River, valuable riverside communities have survived, including, in particular, riparian forests, rushes and herbal communities. The purpose of protection is to preserve a fragment of the Długa River valley with a mosaic of forest and open habitats.
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.1578>)
3. Łosiowe Błota is a peat bog phytocenotic natural reserve (established 1980, area 31.64 ha) located in the area of Las Bemowski, near Warsaw. The purpose of its creation was to preserve in their natural communities of fens locations of rare and protected plant species.
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.1050>)

4. Żurawie Chrusty nature reserve is a peat bog reserve in the Kashubian Lake District within the area of the Kashubian Landscape Park (established 1990, area 21.82 ha). The aim of protection is to preserve, for scientific, educational and landscape reasons, the dystrophic lake, natural peat bog communities with rare plant species, which are a refuge for wetland birds.
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.578>)
5. The “Ustronie” is a forest natural reserve (established 1958, area, 10.94 ha) located about 6 km from Czersk. The purpose of its creation was to preserve a protected fragment of stand of various ages and species with impressive specimens of very old pines, oaks and beeches. Plant communities occurring in the reserve are: not fully natural subcontinental oak-hornbeam forest (*Tilio-Carpinetum*), continental mixed forest (*Quercus roboris-Pinetum*), marsh birch (*Vaccinio uliginosi-Betuletum pubescentis*) and currant alder (*Ribonigri-Alnetum*).
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.104>)
6. The “Kielpińskie Lake” water nature reserve is the oxbow lake of the Vistula (established 1988, area 20.54 ha). It is located in the Łomianki, near Warsaw. The reserve includes the oxbow lake, as well as meadows, pastures and arable land of the 50 m wide coastal belt. The aim of protection is to preserve the Vistula oxbow lake with its characteristic fauna and flora.
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.1051>)
7. The “Dolina Huczka” is a forest reserve (established 2007, area 11.95 ha). It was created to preserve valuable forest and spring biocenoses in the “Słupia Valley” Landscape Park. There are acidic and fertile beech forests, oak-hornbeam forests and riparian forests. An important element of the forests are tree stand fragments of natural origin, often exceeding the age of 150 years.
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.1302>)
8. The “Klimonty” is a forest reserve (established 2015, area 109.20 ha) located near Klimonty (Mazowsze). It was created to preserve the wetland ecosystems as well as the complex of alder and riparian forests that constitute refuges for protected and endangered species of plants and animals.
(<https://crfop.gdos.gov.pl/CRFOP/widok/viewrezerwatprzyrody.jsf?fop=PL.ZIPOP.1393.RP.1574>)

Table 1: Nature reserves in Poland from where samples were taken

No.	Date	Nature reserve	Location map
1	08.06.2019	Bukowiec Jabłonowski 52.385° N, 20.939° E	
2	07.06.2019 22.06.2019	Ustronie 53.757° N, 18.004° E	
3	10.06.2019 25.06.2019	Mosty Kalińskie 52.296° N, 21.266° E	
4	08.06.2019 23.06.2019	Łosiowe Błota 52.257° N, 20.861° E	
5	21.06.2019	Dolina Huczka 54.282° N, 17.316° E	
6	08.06.2019 23.06.2019	Jezioro Kielpińskie 52.362° N, 20.873° E	
7	10.06.2019	Klimonty 52.168° N, 22.540° E	
8	22.06.2019	Żurawie Chrusty 54.336° N, 17.958° E	

The 93 specimens of centipedes and millipedes were collected by harvesting from plant debris, rotten wood, bedding, stubbing, etc. They were preserved in 96% ethanol. After identification they were deposited in the collection of the Zoological Department of Pomeranian University in Słupsk. Species identifications are based on Zalesskaja (1978) and Lokšina (1969). As a supporting source, Neckařová (2009) was also used.

This research was conducted with financial support to Artsiom Ostrovsky by the Polish Committee of UNESCO in 2019.

Results

Chilopoda

Order Lithobiomorpha Pocock, 1895

Family Lithobiidae Newport, 1844

Lithobius forficatus (Linnaeus, 1758)

Material examined: Bukowiec Jabłonowski nature reserve, 2♀, 3♂, 08.06.2019; Ustronie nature reserve, 3♂, 07.06.2019; 1♂, 22.06.2019; Łosiowe Błota nature reserve, 4♀, 6♂, 08.06.2019; 2♀, 3♂, 23.06.2019; Żurawie Chrusty nature reserve, 1♂, 22.06.2019; Dolina Chuczka nature reserve, 1♂, 21.06.2019; Jezioro Kiempinskie nature reserve, 1♀, 1♂, 23.06.2019; Mosty Kalińskie nature reserve, 3♀, 5♂, 25.06.2019.

L. erythrocephalus C.L. Koch, 1847

Material examined: Łosiowe Błota nature reserve, 3♀, 1♂, 23.06.2019; Ustronie nature reserve, 4♂, 07.06.2019; 1♀, 22.06.2019; Klimonty nature reserve, 1♀, 10.06.2019; Żurawie Chrusty nature reserve, 3♂, 22.06.2019.

Order Geophilomorpha Pocock, 1895

Family Geophilidae Leach, 1816

Geophilus flavus (De Geer, 1778)

Material examined: Łosiowe Błota nature reserve, 1 ex., 08.06.2019.

Diplopoda

Order Polyxenida Verhoeff, 1934

Family Polyxenidae Lucas, 1840

Polyxenus lagurus (Linnaeus, 1758).

Material examined: Ustronie nature reserve, 9 exx., 07.06.2019; Żurawie Chrusty nature reserve, 1 ex., 22.06.2019.

Order Glomerida Brandt, 1833

Family Glomeridae Leach, 1816

Glomeris tetrasticha (Brandt, 1833)

Material examined: Łosiowe Błota nature reserve, 13 exx., 23.06.2019.

Order Julida Brandt, 1833

Family Blaniulidae C. L. Koch, 1847

Nopoiulus kochii (Gervais, 1847).

Material examined: Żurawie Chrusty nature reserve, 1 ex., 22.06.2019.

Family Julidae Leach, 1814

Cylindroiulus punctatus (Leach, 1815).

Material examined: Dolina Chuczka nature reserve, 1♂, 21.06.2019.

Leptoiulus proximus (Němec, 1896).

Material examined: Łosiowe Błota nature reserve, 1 ex., 08.06.2019.

Rossiulus vilnensis (Jawłowski, 1925)

Material examined: Łosiowe Błota nature reserve, 2♀, 1♂, 08.06.2019; 3♀, 1♂, 23.06.2019.

Ommatoiulus sabulosus (Linnaeus, 1758).

Material examined: Jezioro Kiempińskie nature reserve, 1♂, 08.06.2019; 2 exx., 23.06.2019.

Order Polydesmida Pocock, 1887**Family Polydesmidae Leach, 1815**

Polydesmus complanatus (Linnaeus, 1761).

Material examined: Łosiowe Błota nature reserve, 1♂, 08.06.2019; 3♀, 1♂, 1 ex., 23.06.2019; Mosty Kalińskie nature reserve, 1♂, 25.06.2019.

Discussion and Conclusions

Preliminary data have been obtained confirming the presence of numbers of Myriapods species in 6 forest and 2 peat bog reserves in Pomerania and Mazovia.

A common inhabitant of the litter, *Lithobius forficatus*, has been recorded in all reserves, except for Klimonty. *Lithobius erythrocephalus* was common in 4 reserves, both in forest (Klimonty, Ustronie) and peat bog (Żurawie Chrusty, Łosiowe Błota). The single specimen of *Geophilus flavus* was found in the Łosiowe Błota reserve. The species composition and structure of chilopod communities in the Mazovia reserves have been described and analyzed in detail by Wytwer (1995). Both species of *Lithobius* were common, *Geophilus flavus* [familiar under its synonymic name *Necrophloeophagus flavus* (De Geer, 1778)] recorded in linden-oak-hornbeam forests.

Diplopoda were represented by 8 species. *Polyxenus lagurus* and *Polydesmus complanatus* were found more often than others – the first in two Pomeranian reserves, the second – in two reserves on Mazovia.

Our results were limited by our collecting methods; the main goal of our research was the inventory of protected beetle species and we did not use soil traps and soil samples. Our study is a preliminary one and its results cannot be used to assess the state of the communities.

References

- Jastrzębski P., Hajdamowicz I., Żabka M., Paszko K., Błaszczuk B. (2006) Millipedes (Diplopoda) of selected habitats of the Poleski National Park. *Acta Scientiarum Polonorum, Biologia*, **5**: 13–25.
- Jastrzębski P., Stańska M. (2007) Krocionogi (Diplopoda) rezerwatu “Dębniak”. *Chrońmy Przyrodę Ojczystą*, **63** (5): 34–45. (in Polish).
- Jaśkiewicz W. (1974) Krocionogi (Diplopoda) rezerwatu Muszkowicki Las Bukowy w powiecie ząbkowickim. *Ochr. Przyr.*, **40**: 247–251.
- Jędrzyckowski W. (1985) Równonogi (Isopoda) i krocionogi (Diplopoda) rezerwatu “Las Bielański” w Warszawie. *Fragmenta Faunistica*, **29** (6): 85–91. (in Polish).
- Kaczmarek J. (1977) Pareczniki (Chilopoda) rezerwatu “Dębina” pod Wągrowcem. *Badania Fizjograficzne nad Polską Zachodnią, Seria C, Zoologia*, **30**: 149–153. (in Polish).

- Kaczmarek J. (1980) Katalog fauny Polski. XIV, 4. Pareczniki (Chilopoda). PWN, Warszawa, 44 p. (in Polish).
- Kaczmarek J. (1989) Pareczniki (Chilopoda) wybranego lasu grądowego Wielkopolski na przykładzie rezerwatu Jakubowo. *Fragmenta Faunistica*, **17** (32): 369–379. (in Polish).
- Leśniewska M. (1997) Zgrupowanie pareczników (Chilopoda) w rezerwacie przyrody “Buki nad jeziorem Lutomskim”. Wyd. Nauk. UAM, Zoologia, Poznań, 83 p. (in Polish).
- Leśniewska M., Mock A., Kania G. (2011) Centipede (Chilopoda) diversity in forest habitats of the Ojców National Park. *Polish Journal of Environmental Studies*, **20** (3): 581–590.
- Leśniewska M., Taborska M. (2003) The centipede community of a beech forest in Magura National Park, Poland. *Fragmenta Faunistica*, **46** (2): 109–119.
- Lokšina I.E. (1969) Opredelitel' dvuparnonogikh mnogonozhek Diplopoda ravninnoï chasti SSSR [Identification book of millipedes (Diplopoda) in the plain part of the USSR European territory]. Nauka Publ., Moscow, 78 p. (in Russian).
- Neckařová M. (2009) Stonožky řádu Lithobiomorpha České Republiky. Palacky University, Olomouc, Czech Republic, 95 p. (in Czech).
- Stojałowska W., Starega W. (1974) Krocionogi Diplopoda. Katalog Fauny Polski 14 (1), Instytut Zoologii PAN, PWN, Warszawa, 71 p. (in Polish).
- Trojan P., Wytwer J. (1995) Effect of age differentiation of the pine forests of Puszcza Białowieska on fauna resources and diversity. *Fragmenta Faunistica*, **38**: 333–338.
- Wytwer J. (1995) Faunistical relationships between Chilopoda of forest and urban habitats in Mazovia. *Fragmenta Faunistica*, **38**: 87–133.
- Wytwer J. (2008) Wije (Myriapoda). In: Fauna of Poland – characteristic and check list of species. Vol. III. Bogdanowicz, E. Chudzicka, I. Pilipiuk i E. Skibińska (eds.), Museum and Institute of Zoology PAS, Warszawa: 327–328.
- Zalesskaja N.T. (1978) Opredelitel' mnogonozhek kostyanok SSSR [Key for identification of centipedes of Soviet Union]. Nauka Publ., Moscow, 212 p. (in Russian).